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ON *DECAPTERUS SCOMBRINUS* (VALENCIENNES)

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After examining various type material in the Paris Museum in 1909, I reached the conclusion that *Decapterus macarellus*, the terminal member of this genus, that is the one farthest removed from the primitive caranx stem, was cosmopolitan in warm seas, perhaps differentiable into geographic races as *macarellus* (North Atlantic), *sanctae-helenae* (South Atlantic), *hypodus* (west coast of America), *pinnulatus* (Central Pacific), *muroadsi* (Japanese Seas), and *macrosoma* (East Indies). It was more slender than the others, longer bodied, with teeth absent or scarcely evident and scutes fewer and confined to the posterior part of the lateral line.

In 1923 I listed a specimen of *Decapterus* from Mangareva as *D. macarellus pinnulatus* (Amer. Mus. Novitates, No. 94, p. 3). Two others recently collected by Templeton Crocker from Hiva Oa Island, Marquesas, and Albemarle Island, Galapagos, are very like it, such slight differences as they show being assignable to size and individual variation; but on critical comparison with specimens of *pinnulatus* from its type locality, the Hawaiian Islands, collected by David Starr Jordan in 1921, they are clearly specifically distinct from that form. Though within the *macarellus* group, they are somewhat deeper than *macarellus*, with scutes occupying most of the straight part of lateral line in large specimens. A more tangible difference is in the undifferentiated scales of the lateral line preceding the scutes, 60 to 80 in number versus 90 to 105 in *macarellus* races. I refer them without hesitation to *Decapterus hypodus* Gill, 1862 (Proc. Acad. Phila., p. 261), Cape San Lucas.

However, Valenciennes, 1846 ('Voyage "Venus," ' p. 332, Pl. VII, fig. 1) described a *Decapterus* from the Galapagos as *Caranx scombrinus*, which must be considered. Jordan and Evermann, 1896 (Bull. U. S. Nat. Mus., XLVII, pt. 1, p. 908), thought this, without seeing it, close to *Decapterus punctatus*, but when I examined the type in Paris, an unsatisfactory stuffed specimen, it seemed to me close to if not identical with *macarellus*. Furthermore, my memoranda at the time, of anal (about 27—1) and scutes (about 29), made without prejudice or reference to the type description (with which they disagree), agree with the specimens

under consideration. Comparing Valenciennes' figure of *Caranx scombrinus* with this material convinces me that this was the fish he had. Hence, I so identify it, and make *Decapterus hypodus* Gill a synonym of *Caranx scombrinus* Valenciennes.

On the basis of one unsatisfactory specimen of *Decapterus muroadsi* from Japan, to hand for comparison, that form is close to *scombrinus* (as recognized above) rather than to *pinnulatus* or *macarellus*. At present I recognize forms of the *Decapterus macarellus* group according to the following key and synonymy.

This paper was prepared prior to the receipt of a review of the genus *Decapterus* by Norman (1935, Ann. Mag. Nat. Hist., (10) XVI, pp. 252–264, Figs. 1–4), with which, fortunately, it has been possible to correlate it.

DECAPTERUS Bleeker

1.—Depth in length to notch of caudal fin, 4.4 to 5; 47 to 56 scales followed by 32 to 40 scutes; teeth small but evident.....(other species).

Depth in above length about 4; 26 small scutes on posterior half of lateral line. Dorsal with 29 soft rays. New Zealand.....*koheru*.

Depth in above length, 5 to 6.5; 60 to 105 scales followed by 20 to 30 scutes; teeth smaller, little evident or absent. *macarellus* group.....2.

2.—Depth in standard length, less than 5.5; scutes occupying posterior 0.5 to 0.8 straight part of lateral line; less than 90 scales followed by 26 to 35 scutes....3.

Depth in standard length less than 5.5; about 100 scales followed by 27 or 28 scutes.....*lajang*.

Depth in standard length, 5.5 or more; scutes occupying about posterior 0.5 straight part of lateral line (*macarellus*).....4.

3.—A scaleless supra-occipital triangle on top of head (up to 250 mm. standard length). Dorsal 29 to 31—1; anal, 26 to 29—1; scutes 26 to 30 (specimens examined).....*scombrinus*.

Supra-occipital triangle mostly scaled (at 150 mm. standard length). Dorsal 31 to 35—1; anal, 26 to 30—1; scutes 26 to 33 (Wakiya, 1924, and synonyms). *muroadsi*.

Dorsal soft rays, 35—1; anal, 30—1; scutes about 35 (type description). *sanctae-helenae*.

4.—[1]Teeth obsolete; scutes 25. North Atlantic.....*macarellus*.

A few very small teeth on palatines and tongue; scutes 25 to 27. Pacific. *pinnulatus*.

Teeth in lower jaw, on vomer and sometimes palatines; scutes 28 to 30. East Indies.....*macrosoma*.

Teeth in lower jaw, on vomer and palatines; scutes 25 to 28; depth 5.3 to 6. Australia.....*leptosomus*.

[1] I find tooth characters unsatisfactory in this genus, and the geographic races of *macarellus* little more than nominal until material from their respective localities has been compared. There is some doubt whether *leptosomus* belongs here.

Decapterus scombrinus (Valenciennes)

Caranx scombrinus VALENCIENNES, 1846, 'Voyage "Venus," ' p. 332, Pl. VII, fig. 1. Galapagos Islands.

Decapterus hypodus GILL, 1862, Proc. Acad. Phila., p. 261. Cape San Lucas (dorsal soft rays, 31—1, misprinted 21—1 in Bull. XLVII, U. S. Nat. Mus.).

Decapterus macarellus pinnulatus, NICHOLS, 1923, Amer. Mus. Novitates, No. 94, p. 3. Mangareva. Not *Caranx pinnulatus* Eydoux and Souleyet.

Decapterus kiliche, NORMAN, 1935, Ann. Mag. Nat. Hist., (10) XVI, p. 260, Fig. 3. Muscat; not of Cuvier and Valenciennes (type examined, 1909).

HABITAT.—Eastern Pacific, or Indo-Pacific.

Depth in length to base of caudal, 4.5 (at 355 mm.) to 5.3 (at 85 mm.); head, 3.5 to 3.8. Eye in head, 4 to 4.5; pectoral, 1.2 (at 355 mm.), 1.3 (at 235 mm.), 1.4 (at 213 mm.), 1.6 (at 85 mm.). Dorsal soft rays, 29 to 31—1; anal, 26 to 29—1. Scales 61 to 77 + 26 to 30 more or less well-developed scutes occupying a little more than half (at 85 mm.) to 0.8 of the straight part of lateral line (at 235 to 355 mm.), which is contained 1.1 to 1.4 times in the curved part. Scales on top of head little developed at 85 mm., leaving a scaleless supra-occipital triangle at from 213 to 235 mm., which is invaded and covered by scales leaving only its backward directed apex scaleless at 355 mm.

More or less silvery, darker on the back, the dark blotch at margin of opercle not conspicuous, lining of gill-cavity dusky or blackish at 213 mm. and larger.

I find no significant differences in *Decapterus kiliche* as described and figured by Norman and believe he must have had a fish at least specifically identical.

Decapterus muroadsi (Temminck and Schlegel)

Caranx muroadsi TEMMINCK AND SCHLEGEL, 1847, 'Fauna Japonica,' Pl. LVIII, fig. 1. Japan.

Decapterus macrosoma and *lajang*, WAKIYA, 1924, Ann. Carn. Mus., XV, Pls. XVI, fig. 2, XVII, fig. 1. Japan.

HABITAT.—Japanese Seas.

Depth in length to base of caudal, 5.1 to 5.2 (at 133 mm.). Dorsal soft rays, 33—1; anal, 28—1. Scales about 80 + 26 to 28 more or less well-developed scutes occupying 0.5 to 0.7 of the straight part of lateral line.

Bluish on back to yellowish along mid-line of side, abruptly whitish below; a small black opercular spot.

When *sanctae-helenae* is better known, this will very likely be found to be a distinguishable race of same.

Decapterus lajang Bleeker

Decapterus lajang Bleeker, 1855, Nat. Tijd. Ned. Ind., VIII, p. 302. Ternate.

Decapterus lajang, Norman, 1935, Ann. Mag. Nat. Hist., (10) XVI, p. 261. Durban.

Habitat.—East Indies and Indian Ocean.

Depth, 5 to 5.3; head, 3.8 to 3.9. Eye in head, 3.7 to more than 4 (specimens of 185 to 190 mm. total length). Dorsal soft rays, 34 or 35; anal, 28 to 31. Scutes, 27 or 28.

This may be conspecific with *sanctae-helenae*, *muroadsi*, or both.

Decapterus sanctae-helenae (Cuvier and Valenciennes)

Caranx sanctae-helenae Cuvier and Valenciennes, 1833, 'Hist. Nat. Poiss.,' IX, p. 37. St. Helena.

?*Decapterus muroadsi*, Barnard, 1927, Ann. South. Afr. Mus., XXI, p. 536. Dalagoa Bay.

Habitat.—St. Helena. The relationship of the fauna of St. Helena to that of South Africa is such that a *Decapterus* occurring in the former would almost surely be present in the latter locality.

When in the Paris Museum in 1909, I made notes on the types of *Caranx macarellus* and *jacobaeus* Cuvier and Valenciennes, *scombrinus* Valenciennes, and *pinnulatus* Eydoux and Souleyet, but did not find the type of *sanctae-helenae*, concerning which form there is some uncertainty. I believe it advisable to use *macarellus* as a species name in spite of page priority of *sanctae-helenae*, in case *sanctae-helenae* proves to be conspecific with *macarellus;* and it now seems unlikely that it is so. Steindachner and Döderlein, 1885 (Denkschr. Wien, XLIX, p. 185), synonymize *muroadsi* with *sanctae-helenae*, and *muroadsi* is specifically distinct from *macarellus*, probably closer to *scombrinus*. They mention St. Helena material, presumably *sanctae-helenae*, as well as Japanese material of *muroadsi*, give an excellent figure of the latter, and would be expected to have recognized the two as distinct if they had not been very close. However, the characters they give as diagnostic for their comprehensive *sanctae-helenae*, pertain to the whole *macarellus* group including not only *muroadsi* but *scombrinus*, and *macarellus* races as well, distinguishing these from other members of the genus *Decapterus;* and it may be noted that prior to critical study and comparison of recently collected specimens of *scombrinus* I was of the opinion that this whole group was conspecific.

If Norman has not confused more than one form in material he assigns to *sanctae-helenae*, it varies in characters I have otherwise found

dependable in this group. His figure of a St. Helena specimen is very like *muroadsi*.

Decapterus macarellus (Cuvier and Valenciennes)

Caranx macarellus Cuvier and Valenciennes, 1833, 'Hist. Nat. Poiss.,' IX, p. 40. Martinique.

Habitat.—Cosmopolitan in warm seas.

Depth in length to base of caudal, 5.0 to 6.5. Dorsal soft rays, 26 to 34—1; anal, 27 to 30—1. Scales, 90 to 104 + 25 to 30 more or less well-developed scutes occupying about the posterior half of the lateral line.

Bluish silvery above, paler below. A black spot at the upper edge of the opercle. Base of pectoral dusky.

Decapterus macarellus macarellus (Cuvier and Valenciennes)

Caranx macarellus Cuvier and Valenciennes, 1833, 'Hist. Nat. Poiss.,' IX, p. 40. Martinique.

Caranx Jacobaeus Cuvier and Valenciennes, 1833, 'Hist. Nat. Poiss.,' IX, p. 42. Cape Verdes.

Habitat.—Atlantic.

Decapterus macarellus pinnulatus (Eydoux and Souleyet)

Caranx pinnulatus Eydoux and Souleyet, 1841, 'Voy. "Bonite,"' Zool., I, p. 165, Pl. iii, fig. 1. Hawaiian Islands.

Habitat.—Pacific.

Depth in length to base of caudal, 5.5 (at 220 mm.) to 6.2 (at 180 mm.); head, 4 to 4.1. Eye in head, 4 to 4.5; pectoral, 1.5. Dorsal soft rays, 32 to 34—1; anal, 27 to 28—1. Scales, about 104 + 25 to 27 more or less well-developed scutes occupying about 0.5 of the straight part of lateral line, which is contained about 1.2 in the curved part. No scaleless supra-occipital area on top of head.

Dark above to mid-line of sides; whitish below; a blackish opercular spot. Lining of gill-cavity grayish or silvery, with dark specks above and behind (at 180 to 200 mm.) and showing other dark marking in a larger fish (of 220 mm.).

Decapterus macarellus macrosoma Bleeker

Decapterus macrosoma Bleeker, 1851, Nat. Tyds. Ned. Ind., I, p. 358. Sea of Batavia.

Habitat.—East Indies and Indian Ocean.

Decapterus macarellus leptosomus Ogilby

Decapterus leptosomus OGILBY, 1898, Proc. Linn. Soc. N. S. Wales, (2) XII (1897), p. 760. Port Jackson.

HABITAT.—Australia.